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Evaluation of clinical and laboratory parameters of patients with the diagnosis of upper gastrointestinal system bleeding

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ABSTRACT

Aims: In this study, it was purposed to evaluate demographic, clinical, laboratory characteristics, bleeding etiologies, risk factors, comorbidity and mortality of the patients who were interned with the diagnosis of upper gastrointestinal system bleeding.

Methods: In this study, 157 patients those hospitalized to Ministry of Health Beyoğlu Public Hospitals Association Gaziosmanpaşa Taksim Training and Research Hospital Internal Medicine Clinic with the diagnosis of upper gastrointestinal bleeding between 1 April 2014 and 1 April 2015 were evaluated retrospectively. Age, gender, duration of hospitalization, comorbidity, prescription story, need and amount of transfusion, endoscopic findings, hemoglobin (Hgb), blood urea nitrogen (BUN), urea, creatinine (Cr) values on admission, complication and mortality data were recorded. IBM SPSS (Statistical Package for Social Sciences) for MAC 21.0 program was used for statistical analysis in order to evaluate the data.

Results: Patient were aged between 17 and 94 .The mean age was 59.04±20.55. 95 (68.35%) of patients were male and 44 (31.65%) were female with the male/female ratio of 2.15/1. While 64.75% of the patients in our study had at least one additional disease, no additional disease was detected in 35.25%. Endoscopic procedure was peformed 89.93% of patients for both diagnosis and treatment. Exitus was seen in 7 patients and mortality was detected as 5.04%. Median age of deceased patients was 75.28±15.39. Median age of surviving patients was 58.18±20.47.

Conclusion: Our study revealed that upper GI bleeding is an important cause of mortality and morbidity despite advanced treatment options and intensive care conditions. The most important risk factors responsible for mortality are advanced age and the presence of comorbidities, as seen in our study.

Keywords: Upper gastrointestinal system bleeding, duodenal ulcer, endoscopy

INTRODUCTION

The upper gastrointestinal (GI) system bleeding is defined as bleeding from the gastrointestinal segment proximal to the ligament of Treitz, including the esophagus, stomach, and duodenum. It is categorized as varicose and non-variceal bleeding. Upper GI bleeding is responsible for 67 hospital admissions per 100,000 population annually in the USA and has an inpatient mortality rate of 1.9% in a tendency to decrease recently.[1] The most common causes of upper GI bleeding are peptic ulcer disease and esophageal varices.[2] Patients with upper gastrointestinal tract bleeding may present with minor or subclinical symptoms, or they may have a fulminant course. Approximately 80% of bleeding stops spontaneously, while 20% continues or recurs.[3,4] Some clinical parameters such as age, comorbidity, hemodynamic status, hematemesis and hematochezia are important risk factors that increase the risk of mortality.[5-7]

In our study, we aimed to evaluate the demographic characteristics, clinical and laboratory parameters, bleeding etiologies, risk factors, morbidity and mortality by retrospectively scanning the files of patients who were interned and followed up with a diagnosis of upper GI bleeding in the internal medicine clinic between 1 April 2014 and 1 April 2015.

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METHODS

In this study, 157 patients who were hospitalized with a diagnosis of upper GI bleeding in the internal medicine clinic of Ministry of Health Beyoğlu Public Hospitals Association Gaziosmanpaşa Taksim Training and Research Hospital between 1 April 2014 and 1 April 2015 were evaluated retrospectively. 18 patients were excluded from the study due to missing data in their files. Data about age, gender, duration of hospitalization, presence of additional diseases, history of drug use [acetyl salicylic acid (ASA), oral anticoagulant (OAC), non-steroidal anti-inflammatory drug (NSAID)], need and amount of transfusion, endoscopy findings, arrival hemoglobin, blood urea nitrogen (BUN), urea and creatinine (Cr) values, complications and exitus development of patients were recorded. Using these data, the demographic characteristics of the patients, length of stay, comorbidities, complications, mortality rates, BUN/Cr, urea/Cr ratios, drug use rates and medications used were investigated. Rate of endoscopic procedures, transfusions and relationship between age-mortality, and age-length of hospital stay were also analyzed. The study was carried out with the permission of the Ministry of Health Beyoğlu Public Hospitals Association Gaziosmanpaşa Taksim Training and Research Hospital. We obtained an informed consent form from all patients for procedure. All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. Ethics committee approval was not required at that time.

Statistical Analysis

IBM SPSS (Statistical Package for Social Sciences) for MAC 21.0 program was used for statistical analysis while evaluating the data obtained in the study In addition to descriptive statistical methods (Mean, standard deviation, frequency), Student's t test was used for two groups in normally distributed parameters in the comparison of quantitative data and Mann Whitney U test was used to compare two groups of parameters those do not have normal distribution. Oneway Anova test was used for comparisons of normally distributed parameters between more than two groups. Oneway Anova test was used for comparisons of normally distributed parameters between more than two groups. Kruskal Wallis test was used in comparisons between more than two groups of parameters those do not have normal distribution, and Mann Whitney U test was used to determine the group giving rise to discrepancy. Pearson R correlation was used to examine the relationships between continuous variables. Z test was used to compare percentage values. All analyzes were performed two-tailed.

RESULTS

7.19% of the cases are between the ages of 17-25, 21.58% are between the ages of 26-45, 27.34% are between the ages of 46-65, and 43.88% are over the age of 65. 31.65% of the cases are female and 68.35% are male. The male/female ratio is 2.16. 35.25% of the cases have no comorbidities, 64.75% have at least one comorbidity. 30.94% of the cases have a history of drug use (ASA, OAC, NSAID), while 60.94% don't. Complications developed in 13.67%, any complications did not develop in 83.33% of the cases (**Figure 1**).

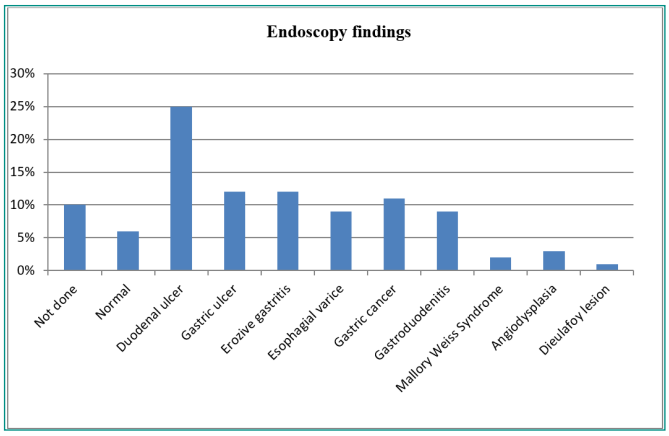

Figure 1. Percentage distribution of endoscopy findings of cases

Complications were observed in older patients, p>0.05. One patient was complicated with perforation and referred to surgery. That patient was male and 56 years old. He was hypotensive and his hgb value was 8.4 gr/dl on admission. His endoscopic finding was gastric cancer. He did not have any other comorbidity. He died on post operative second day due to septic schock. 94.96% of the cases were alive, 5.04% died. 70.50% of the cases were transfused and 29.50% of the cases were not (**Figure 2**).

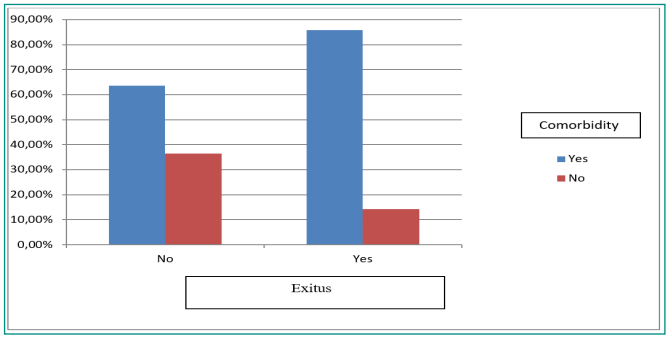

Figure 2. Comorbidity rates by death and survival (p>.200)

Mean transfusion amount was 2.09±2.01 units (Min: 0, max: 14.00). All patients were treated with intravenous (IV) and proton pump inhibitors (PPIs) ampirically. Patients with known or newly detected esophagial/gastric varices were applied somatostatin infusion. Endoscopy was performed in 89.93%, while endoscopy was not performed in 10.07% of the cases. Duodenal ulcer was most commonly detected finding endoscopically in 25% of the cases. General characteristics of the cases are shown in **Table 1** and endoscopic findings are shown in **Figure 1**.

Mean values of age, length of stay, hgb value, BUN/Cr ratio, transfusion amount according to endoscopy findings are illustrated in **Table 2** and in pairwise group comparisons, it was observed that patients with doudenal ulser findings stayed in the hospital for a shorter period of time than patients with gastric cancer findings, (p= 0.003).

Table 1. General characteristics of cases with upper GIS bleeding

		N	%
Age	17-25	10	7.19
	26-45	30	21.58
	46-65	38	27.34
	>65	61	43.88
Gender	Female	44	31.65
	Male	95	68.35
Length of hospital stay (day/s)	1-5	75	53.96
	6-10	43	30.94
	11-20	17	12.23
	>20	4	2.88
Comorbidity	No	49	35.25
	Yes	90	64.75
Drug use (ASA, OAC, NSAID)	No	96	69.06
	Yes	43	30.94
Complication*	No	120	86.33
	Yes	19	13.67
Schock		6	4.31
CV¶		8	5.75
ARF		1	0.71
EUHD		-	-
Rebleeding$^{\Delta}$		3	2.15
MT$^{\varepsilon}$		1	0.71
Perforation		1	0.71
Exitus	No	132	94.96
	Yes	7	5.04
Endoscopic procedure	Not done	14	10.07
	Done	125	89.93
Blood transfusion	Not done	41	29.50
	Done	98	70.50

Abbrevetions: ASA, acetyl salicylic acid; OAC, oral anticoagulant; NSAID, non steroidal anti inflamatory drug; CV, cardiovascular; ARF, acute renal failure; EUHD, exacerbation of underlying hepatic disease; MT, massive transfusion
*Complications are defined as schock requiring positive inotropics, acute coronary syndrome, arrhythmia, stroke, acute renal failure, rebleeding, exacerbation of underlying hepatic disease, massive transfusion and perforation.
¶ CV complications are defined as acute coronary syndrome, arrhythmia and stroke.acute renal failure.
$^{\Delta}$ Rebleeding is defined as observation of second event bleeding signs after clinical and/or endoscopic stabilization of initial bleeding during hospitalization.
$^{\varepsilon}$ Massive tranfusion is defined as ≥10 units/24hours erythrocyte suspension.

Table 2. Mean values of age, length of stay, hgb value, BUN/Cr ratio, transfusion amount according to endoscopy findings

Endoscopy finding	Age	Length of stay (Days)	Hgb (gr/dl)	BUN/Cr ratio	Transfusion (Number of units)
Not done	66.64	5.57	9.72	44.27	1.50
Normal	60.00	6.50	11.06	29.42	0.87
Duodenal ulcer	46.97	4.40	9.37	32.27	2.17
Gastrik ulcer	61.05	6.23	9.18	45.24	1.76
Erozive gastritis	64.47	7.47	8.55	44.31	2.41
Esophageal varice	54.75	7.75	7.81	32.62	2.08
Gastric cancer	68.33	11.00	8.45	45.68	3.06
Gastroduodenitis	58.41	6.58	9.14	36.03	1.91
Mallory Weiss Syndrome	66.33	5.33	8.90	42.20	3.00
Angiodysplasia	74.25	7.50	9.35	21.45	1.75
Dieulafoy lesion	68.50	4.00	8.35	31.00	3.00

In pairwise group comparisons, it was observed that patients with doudenal ulser findings stayed in the hospital for a shorter period of time than patients with gastric cancer findings, p = 0.003

Distribution of duodenal or gastric ulcers in their own group with respect to Forrest Classification was as following; 3 (5.8%) cases were Class 1B, 4 (7.7%) cases were Class 2A, 14 (26.9%) cases were Class 2B, 5 (9.6%) cases were Class 2C and 26 (50%) cases were Class 3. No Class 1A ulcer was detected. Class 1B to Class 2A was intervened with epinephrine injection during endoscopic procedure. 10 (83.7%) of 12 esophageal varice cases were treated with endoscopic band ligation, also. The median age of deceased patients was determined to be 80 (min: 56, max: 94) (**Figure 3**).

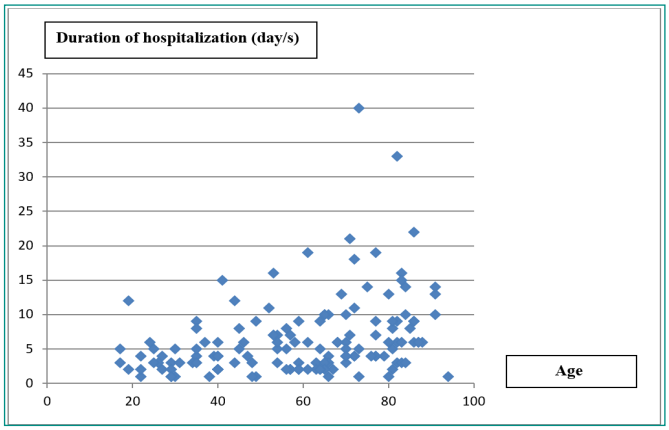

Figure 3. Duration of hospitalization according to age

The median age of surviving patients was found to be 62 years (min:17, max:91). There was a statistically significant difference between the two groups (p=0.040) (**Table 3**). In our study, the rate of comorbidities was 63.63% in those who survived, the rate of comorbidities was found to be 85.71% in those who deceased. However, no significant difference was found in the percentage of comorbidities according to mortality (p>0.200). Mean time from hospitalization to death was 8.14±11.81 (min:1, max:33) in exitus group. Mean values of age, time to outcome, hgb, and transfusion amount of complicated and died patients are shown in **Table 4**. The Mann-Whitney test showed that exitus group BUN/Cr ratio was higher, U=193.00, p=0.010. A similar effect was seen in Urea/Cr ratio, U=202.00, p=0.012.

Table 3. Mean/median ages of surviving and deceased patients

	Mean±SD	Median	Minimum	Maximum
Surviving patients	58.18±20.47	62	17	91
Deceased patients	75.28±15.39	80	56	94
Total	59.04±20.55	63	17	94

The Mann-Whitney U test showed that there was a significant age difference between the two groups, (U = 249, p = 0.040).
Abbrevetions: SD, standard deviation.

Table 4. Age, time to outcome, hgb, and transfusion values of complicated and died patients

	Complications			Excitus		
	Mean	Min	Max	Mean	Min	Max
Age	76.31±14.11	40	94	75.28±15.39	56	94
Time to discharge or death	8.52±8.26	1	33	8.14±11.81	1	33
Hgb (gr/dl)	9.18±1.87	6.70	14.00	8.90±2.42	6.70	14.00
Transfusion (number of units)	3.57±2.89	,00	14.00	2.14±1.21	,00	4.00

The presence of complications had no effect on BUN/Cr or Urea/Cr ratios, p>0.100. No effect of drug use was observed on these values, p>0.200 (**Table 5**). Hemoglobin values were not statistically significant in any subgroups, p>0.05. No statistically significant relationship between transfusion and mortality was observed, p>0.005.

Table 5. Mean values of BUN/Cr and UREA/Cr ratios in relation to exitus and complication status

			BUN/Cr	UREA/Cr
Exitus	No	36.79	78.18	91
	Yes	61.98	132.38	91
Complication	No	37.10	78.58	94
	Yes	44.14	95.65	94
Drug use	No	35.88	76.74	94
	ASA	55.61	116.21	94
	OAC	33.74	71.74	94
	NSAID	38.22	80.29	94

DISCUSSION

In our study, it was determined that the patients who were admitted to the clinic due to upper GI bleeding were mostly older, with comorbidities, and male patients. The ages of the patients range from 17 to 94. The mean age of the patients was determined as 59.04±20.55.

Majority of patients were over age of 65 with a rate of 43.88%. Only 7.9% of the patients were between the ages of 15-25. There are studies in the literature supporting that upper GI bleeding occurs in older ages. In their study on 2196 patients with upper GI bleeding, Wollenman et al.[8] found the average age of the patients to be 52, and in our country, Bahadır et al.[9] found it to be 59.91+7.5. It is thought that the increasing frequency of diseases such as coronary artery disease, cerebrovascular disease, osteoarthritis, which will increase the use of aspirin, NSAIDs and anticoagulant drugs, and additional diseases such as chronic liver disease, chronic renal failure and GI malignancies are effective in the higher incidence of upper GI bleeding in older ages. 95 (68.35%) of the patients were male and 44 (31.65%) were female, and the male/female ratio was 2.15/1. In studies on upper GI bleeding in the literature, the male/female ratio is close to that in our study.[10,11] While 64.75% of the patients in our study had at least one additional disease, no additional disease was detected in 35.25%. There are studies in the literature indicating that upper GI bleeding is often accompanied by additional diseases.[12,13]

Endoscopy was performed in 89.93% of the patients in our study for diagnosis and treatment purposes, and in 14 patients, 10.07%, it could not be performed due to reasons such as improper clinical conditions such as arrhythmia, acute coronary syndrome, respiratory failure, technical problems in the endoscopy unit and the patient's refusal to accept the procedure. In the literature, the rates of endoscopy in patients hospitalized with upper GI bleeding are close to those in our study. Longstreth et al.[10] found a 93.4% rate of endoscopy in their study. In our study, there was no Forrest Class 1A case and distribution of other groups was in favor of Class 3 incompatible with the literature.[14] This discrepancy could be explained in a way that in our clinics there was a tendency for endoscopic procedures to be performed after clinical stabilization enough to be considered elective.

Exitus occurred in 7 of the cases in our study during hospitalization and the mortality rate was found to be 5.04%. In the literature, the mortality rate varies between 3% and 14%.15 It was found to be 4.9% in the study of Tuncer et al.[16], 5.1% in the study of Kasap et al.[17], and 12.1% in the study of Bayır et al.[18] in patients presenting to the emergency clinic. It is thought that the mortality rate in our study is close to the lower limits of the range given in the literature because the patients included in the study consisted of patients who were admitted to the clinic after being evaluated in the emergency department.

In our study, the average age of the patients who died was 75.28±15.39, and the average age of the patients who survived was found to be 58.18±20.47, and it was considered statistically significant, p=0.040. The relationship between mortality and age in the literature is consistent with that in our study.[19]

Study Limitations

In our study, the rate of comorbidities was found to be 63.63% in those who survived, while the rate of comorbidities was found to be 85.71% in those who died, However, no significant difference was found in the percentage of comorbidities according to mortality (p>0.200). In our study, although the rate of comorbidities in the mortality group was higher than that in the survival group, it was not statistically significant due to the fact that there were not a sufficient number of patients in the mortality group.

CONCLUSION

Our study revealed that upper GI bleeding is an important cause of mortality and morbidity despite advanced treatment options and intensive care conditions. The most important risk factors responsible for mortality are advanced age and the presence of comorbidities, as seen in our study.

The most common causes of upper GI bleeding are peptic ulcer disease and esophageal varices. The approach to a patient presenting with acute upper GI bleeding should be to first evaluate the patient's hemodynamic status and ensure stabilization. The next step should be to identify the bleeding site, ensure bleeding control, and prevent rebleeding. Patients of advanced age and comorbidities, and those with hemodynamic instability such as shock, orthostatic hypotension, or active bleeding symptoms should be monitored in intensive care conditions where vital signs can be closely monitored.

The main etiological factors in the formation of peptic ulcers, which are responsible for a significant portion of upper GI bleeding, are H.pylori, acetyl salicylic acid and other NSAID use. Thus situated, unnecessary and carelessly use of aspirin and NSAIDs should be avoided, and when there is a medical indication for their use, protective measures such as acid suppressive treatment and H.pylori eradication should be taken.

For esophageal variceal bleeding, which is another important cause of upper GI bleeding, essential precautions against chronic liver disease (such as campaign alcohol, obesity and hepatitis virus transmission) should be taken in the primary care setting, primary and secondary prophylactic measures against bleeding should also be taken in patients with portal hypertension and associated varicose veins.

ETHICAL DECLARATIONS

Ethics Committee Approval: This article is a publication of the internal medicine specialty thesis of Mehmet Akif Tükenmez, which was completed in 2015. Since the study is produced from a thesis in 2015, ethics committee approval is not required.

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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